TECHNICAL REVIEW DOCUMENT for OPERATING PERMIT 990PLA208 to be issued to:

Evergreen Operating Corporation Burro Canyon Compressor Station Las Animas County Source ID 0710037

Prepared on August 19, 1999 by Ashley L. Campsie

Modified on April 25, 2000 by Michael E. Jensen

I. Purpose

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this Site. It is designed for reference during review of the proposed permit by the EPA and during Public Comment. The conclusions made in this report are based on information provided in the original application submittal of April 14, 1999, additional information submittals of May 4 and July 26, 1999, and February 17, 2000, as well as information from Division files. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

On April 16, 1998 the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short term emission and production/throughput limits on Construction permits. These procedures are being directly implemented in all operating permits that had not started their Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12 month total. Note that, if applicable, appropriate modeling to demonstrate compliance with the National Ambient Air Quality Standards was conducted as part of the Construction Permit processing procedures. If required by this permit, portable monitoring results and/or EPA reference test method results will be multiplied by 8760 hours for comparison to annual emission limits unless there is a specific condition in the permit restricting hours of operation.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and

have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised Construction Permit.

II. Source Description:

This source is classified as a natural gas compressor station defined under Standard Industrial Classification 1311. The source will use up to eight (8) individual 2,961 horsepower internal combustion engine powered gas compressors to deliver the coal-bed methane gas into a pipeline for sales distribution. At time of permit issuance only four of the eight compressors were installed and operating. Two (2) internal combustion engine powered electricity generators are located at the facility. The generators are used to produce electricity for the site. Two glycol dehydrators are used to dry the methane gas before the pipeline.

The source is located northwest of Trinidad, Las Animas County in an area designated as attainment for all pollutants. There are no Federal Class I designated areas within 100 km of this facility. New Mexico is an affected state within 50 miles of this facility.

This source is not subject to the Prevention of Significant Deterioration (PSD) review requirements and is not considered a major stationary source (no criteria pollutants with a PTE > 250 tons per year) for Regulation No. 3, Part B, Section IV.D.3. Eight (8) of the compressor engines will be equipped with an oxidizing catalyst to limit CO emissions to less than 250 tons per year, making this facility a synthetic minor source for PSD considerations. The following table provides the facility-wide emissions. The Potential to Emit values are the maximum allowable emissions for the current facility. The actual emissions are for Data Year 1998 and do not reflect the recent emission changes created by providing additional carbon monoxide oxidizing catalysts for the compressor engines, and the removal of the emission control devices from the generator engines.

<u>Pollutant</u>	Potential to Emit (tpy)	Actuals (tpy)
NO_x	221.7	211.8
VOĈ	160.2	160.4
CO	123.9	226.2
HAPs		17.8

The potential to emit is based on the limits set for the permitted units and includes estimated emissions for units not yet constructed. The source stated in their application that they are not subject to 112(r), the Accidental Release Prevention Requirements.

There are no operating personnel continuously at this site. Evergreen requested, and the Division agreed, that for purposes of the "on-site" requirements of this permit, such as the location of records, "on-site" shall be considered to be 1401 17th Street, Suite 1200, Denver, CO.

The Oil and Gas MACT was promulgated on June 17, 1999. It includes two Subparts; HH-NESHAP for Oil and Natural Gas Production and HHH - NESHAP for Natural Gas Transmission and Storage Facilities. This source is subject to the provisions of Subpart HH.

III. Emission Sources

The following sources are specifically regulated under terms and conditions for the Operating Permit for this site.

<u>Unit GS01</u>: Caterpillar G3306NA, 4-Cycle Rich Burn, Spark-ignition, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine Powering a Generator for Electricity Production, Site Rated at 142 HP, SN: 7Y2044.

<u>Unit GS02</u>: Caterpillar G3306NA, 4-Cycle Rich Burn, Spark-ignition, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine Powering a Generator for Electricity Production, Site Rated at 142 HP, SN: 7Y2983.

1. Applicable Requirements - These engines were installed and began operation in January 1995. In August of 1996 the NSCR control systems were installed. Initial Approval Construction Permits 95LA219 and 95LA220 were first issued on February 7, 1997. The permits were modified to increase the hours of operation and correct for site rated horsepower and issued with Initial Approval on February 9, 1999.

On February 17, 2000, documents were submitted requesting the two engines be considered one source, the permit limits be increased to reflect the removal of the catalytic emission control devices from the two engines, and the total number of operating hours for the two engines be restricted. The permit modifications requested are being made directly in the issuance of this Operating Permit. The modified limits will become effective as of the issuance date of this Operating Permit.

The modified Construction Permits contain the following provisions:

Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes.

The combined emissions of air pollutants from the two engines shall not exceed the following limitations:

Nitrogen Oxides 14.0 tons/yr Volatile Organic Compounds 0.2 tons/yr Carbon Monoxide 12.0 tons/yr

The short term limits in the Construction Permits have not been included in the Operating Permit per the policy stated at the beginning of this document. The VOC emission limit is not included because the value is below the APEN reporting deminimis and has a corresponding throughput limit to demonstrate compliance.

The combined consumption of natural gas for the two engines shall not exceed 10.00 million standard cubic feet per year. The short term fuel consumption limit has been removed per the policy stated at the beginning of this document. The combined total operating hours for the two generator engines shall not exceed 8,800 hours per year. This permitting approach provides the flexibility to operate the engines as needed for site power, and yet alternate the engine operation as necessary for maintenance requirements.

Prevention of Significant Deterioration (PSD) requirements shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition. Any relaxation that increases the potential to emit above the applicable PSD threshold will require a full PSD review of the source as though construction had not yet commenced on the source. The source shall not exceed the PSD threshold until a PSD permit is granted.

APEN reporting in accordance with Regulation No. 3, Part A.II.C.

Self-certification of compliance with the modified provisions of the Construction Permits is required within 180 days of the issuance date of this Operating Permit. The due date of the first semi-annual monitoring report required by this Operating Permit will be 180 days after the issuance date of this Operating Permit. Therefore, the Division considers that the Responsible Official certification submitted with the semi-annual monitoring report will serve as the self-certification for compliance with the modified provisions of Construction Permits 95LA219 and 95LA220. On that basis, the appropriate provisions of the modified Construction Permit have been directly incorporated into this Operating Permit.

2. Emission Factors - Emissions from reciprocating engines are produced during the combustion process, and are dependent upon the air to fuel ratio adjustment and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NOx), Carbon Monoxide (CO) and Volatile Organic Compounds (VOC). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted when combustion is incomplete. Approval of the emission factors used for estimating the emissions from these engines is

necessary to the extent that accurate actual emissions are required to verify the need to submit Revised APENs to update the Division Emission Inventory. The emission factors requested by the source were in grams per horsepower-hour. It is Division policy to convert the horsepower-based emission factors to fuel-based emission factors for permitted engines. The emission factor conversion is accomplished by using the horsepower-based emission factor, the design heat rate of the engine, and the engine horsepower. The resulting fuel-based emission factors are compared to AP-42 Table 3.2-1 (10/96) for 4-cycle rich burn engines.

<u>Pollutant</u>	EF (lb/MMBtu)	AP-42 (lb/MMBtu)
NOx	2.84	2.3
CO	8.62	1.6
VOC	0.04	0.03

- 3. Monitoring Plan The source will calculate emissions based on fuel consumption and the fuel based emission factors listed above on a monthly basis. Fuel use for these generator engines will be determined by allocation. Specific monitoring guidance for internal combustion engines located in attainment areas has been developed by the Division as shown on the attached grid titled, "Compliance/Scenario Summary Gas Fired IC Engines." The emission factors proposed are greater than the AP-42 factors. Therefore, according to the monitoring grid, the source will be required to conduct the emission calculations and determine fuel use on a rolling twelve month basis. The Btu content of the natural gas used shall be determined annually using the ASTM analysis method D1826-77 or other Division approved methods.
- **4. Compliance Status -** A current APEN reporting criteria pollutants and HAPs is on file with the Division. This source is currently considered to be in compliance with all applicable requirements.

The following engines had been installed at the facility at the time this Title V Operating Permit was prepared.

<u>Unit CS05</u>: Caterpillar G3612SITA, 4-Cycle Lean Burn, Oxidizing Catalyst for Carbon Monoxide Control Low-NOx Design, Spark-ignition, Turbocharged, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, Site Rated at 2,961 HP, SN: 1YG00100.

<u>Unit CS06</u>: Caterpillar G3612SITA, 4-Cycle Lean Burn, Oxidizing Catalyst for Carbon Monoxide Control, Low-NOx Design, Spark-ignition, Turbocharged, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, Site Rated at 2,961 HP, SN: 1YG00109.

<u>Unit CS07</u>: Caterpillar G3612SITA, 4-Cycle Lean Burn, Oxidizing Catalyst for Carbon Monoxide Control, Low-NOx Design, Spark-ignition, Turbocharged, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, Site Rated at 2,961 HP, SN: 1YG00123.

<u>Unit CS08</u>: Caterpillar G3612SITA, 4-Cycle Lean Burn, Oxidizing Catalyst for Carbon Monoxide Control, Low-NOx Design, Spark-ignition, Turbocharged, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, Site Rated at 2,961 HP, SN: 1YG00137.

The following engines will be installed at the facility in response to marketing demands or the company development plan.

<u>Unit CS09</u>: Caterpillar G3612SITA, 4-Cycle Lean Burn, Oxidizing Catalyst for Carbon Monoxide Control, Low-NOx Design, Spark-ignition, Turbocharged, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, Site Rated at 2,961 HP, SN: NA.

<u>Unit CS10</u>: Caterpillar G3612SITA, 4-Cycle Lean Burn, Oxidizing Catalyst for Carbon Monoxide Control, Low-NOx Design, Spark-ignition, Turbocharged, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, Site Rated at 2,961 HP, SN: NA.

<u>Unit CS11</u>: Caterpillar G3612SITA, 4-Cycle Lean Burn, Oxidizing Catalyst for Carbon Monoxide Control, Low-NOx Design, Spark-ignition, Turbocharged, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, Site Rated at 2,961 HP, SN: NA.

<u>Unit CS12</u>: Caterpillar G3612SITA, 4-Cycle Lean Burn, Oxidizing Catalyst for Carbon Monoxide Control, Low-NOx Design, Spark-ignition, Turbocharged, Air to Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, Site Rated at 2,961 HP, SN: NA.

1. Applicable Requirements - CS05 and CS07 were installed and began operation in May 1997 and April 1998. Initial Approval Construction Permit 96LA721-2 (CS05) was first issued on February 7, 1997. This permit was modified to increase the emission limits for NOx based on stack test results and correct for site rated horsepower. The modification was issued on February 9, 1999 with Initial Approval.

Construction Permit 98LA566 (CS07) was modified to increase the emission limits for NOx based on stack test results, correct for site rated horsepower and adjust the CO emissions to reflect the addition of an oxidizing catalyst control unit, and the modification was issued on February 9, 1999 with Initial Approval

As part of the settlement of the Compliance on Consent Order oxidizing catalytic converters (OCC) are to be installed on both CS05 and CS07. The modification of Construction Permits 96LA721-2 and 98LA0566 to reflect the need for the OCC units requires self-certification of compliance within 180 calendar days of the issuance of this Operating Permit. A semi-annual monitoring report is required by this Operating Permit 180 days after issuance. The Division considers the certification of the semi-annual report by the Responsible Official as self-certification of the compliance with the provisions of the modified Construction Permits, and the provisions have been directly incorporated into this Operating Permit.

Engine CS06 was installed and began operation in November 1997. Initial Approval Construction Permit 97LA0524 (CS06) was first issued on November 19, 1997 and later modified to increase NOx emission limits, add oxidizing catalyst and correct for site rated horsepower.

Engine CS08 was installed in September 1998 and began operation in October 1998. Initial Approval Construction Permit 98LA0567 Modification No. 1 increasing the CO emission limit was issued February 9, 1999 for CS08.

Units CS09-CS12 have not been installed at this time. Initial Approval Construction Permits 98LA0568 through 98LA0571 (CS09-CS12) were issued on February 9, 1999.

These Construction Permits contained the following provisions.

Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes.

Emissions of air pollutants for **each** engine shall not exceed the following limitations:

Nitrogen Oxides	26.0 tons/yr	4333.3 lbs/month
Volatile Organic Compounds	20.0 tons/yr	3333.3 lbs/month
Carbon Monoxide	14.0 tons/yr	2333.4 lbs/month

Consumption of natural gas for **each** engine shall not exceed 17.2 MMscf per month and 206 MMscf per year.

The short term limits will be in effect for the first twelve calendar months after the engine is installed and starts operation. After the first twelve months after the installation and startup of the engine, only the annual limits shall apply. The short term limits are needed for compliance demonstration for beginning the engine operation. After that the short term limits expire in accordance with the policy stated at the beginning of this document.

A source compliance test shall be conducted for **each engine** to measure the emission rate(s) for the gases listed below:

Oxides of Nitrogen, Carbon Monoxide and Oxygen, using EPA approved methods

Source compliance tests for units CS06 and CS08 were performed on October 27 and 28, 1998, respectively. The tests results demonstrated compliance with the current emission limitations.

Prevention of Significant Deterioration (PSD) requirements shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition. Any relaxation that increases the potential to emit above the applicable PSD threshold will require a full PSD review of the source as though construction had not yet commenced on the source. The source shall not exceed the PSD threshold until a PSD permit is granted.

APEN reporting in accordance with Regulation No. 3, Part A.II.C.

Self-certification of compliance with the modified provisions of Construction Permits 97LA0524 and 98LA0567 was required within 180 days after the initial approvals of the modified construction permits were issued and/or the equipment commenced operation. The Division considers that the Responsible Official certification submitted with the Title V application serves as the self-certification of compliance with provisions of the Construction Permits, and the provisions have been directly incorporated into this Operating Permit.

Construction of Units CS09-CS12 must commence within 18 months of initial approval permit issuance, unless an extension is granted pursuant to Regulation 3, Part B, Section IV.G.4.b. If commencement does not occur within the stated time the Construction Permits will expire on August 9, 2000, unless an extension is granted.

The due dates of the semi-annual monitoring reports required by this Operating Permit will be 180 days or less after the engines CS09-CS12 commence operation. The Division considers that the Responsible Official certification submitted with semi-annual monitoring report will serve as the self-certification for Construction Permits 98LA0568 through 98LA071 and the appropriate provisions of the Construction Permit have been directly incorporated into this operating permit.

2. Emission Factors - Emissions from reciprocating engines are produced during the combustion process, and are dependent upon the air to fuel ratio adjustment and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NOx), Carbon Monoxide (CO) and Volatile Organic Compounds (VOC). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted when combustion is incomplete. Approval of the emission factors for these engines are necessary to the extent that accurate actual emissions are required to verify the need to submit Revised APENs to update the Division Emission Inventory. The emission factors requested by the source were in grams per horsepower-hour. It is Division policy to convert the horsepower-based emission factors to fuel-based emission factors for permitted engines. The emission factor conversion is accomplished by using the horsepower-based emission factor, the design heat rate of the engine, and the engine horsepower. The resulting fuel-based emission factors are compared to AP-42 Table 3.2-1 (10/96) for 4-cycle low NOx engines with oxidizing catalysts.

<u>Pollutant</u>	EF (lb/MMBtu)	AP-42 (lb/MMBtu)
NOx	0.26	3.2
CO	0.14	0.084*
VOC	0.20	0.18

^{*}CO reduced by 80% due to oxidizing catalyst

The source emission factor is lower than AP-42 for NOx.

- 3. Monitoring Plan The source will calculate emissions based on fuel consumption and the fuel based emission factors listed above on a monthly basis. Fuel use for these engines will be determined by allocation. Specific monitoring guidance for internal combustion engines located in attainment areas has been developed by the Division as shown on the attached grid titled, "Compliance/Scenario Summary Gas Fired IC Engines." The emission factors proposed are below AP-42 for NOx. Therefore, according to the monitoring grid, the source will be required to conduct the emission calculations and determine fuel use on a rolling twelve month basis. Monthly records of catalyst parameters and air to fuel ratio monitoring shall be kept. Portable monitoring shall be conducted quarterly and the Btu content of the natural gas used shall be determined annually using the ASTM analysis method D1826-77 or other Division approved methods. Compliance test's will be required for the four engines (S009 S012) within 180 days of start-up.
- **4. Compliance Status -** A current APEN reporting criteria pollutants and HAPs is on file with the Division. This source is currently considered to be in compliance with all applicable requirements.

<u>Unit D01</u>: PESCO Triethylene Glycol Dehydrator, Design Rated at 25 MMscfd.

Unit D02: PESCO Triethylene Glycol Dehydrator, Design Rated at 25 MMscfd.

- 1. Applicable Requirements These dehydrators were installed and began operation in 1996 and 1998, respectively. Since the coal-bed methane gas is primarily methane, the emissions from these units (other than methane) are below APEN deminimis reporting levels and normally would be considered insignificant activities. However, the dehydrators are defined as affected facilities under 40 CFR Part 63 Subpart HH, National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities. These dehydrators are exempt from control requirements per §63.764(e) but must maintain records of the exempt determination as required in §63.774(d)(1). These units are also subject to 40 CFR Part 63 Subpart A (as incorporated by reference in Colorado Regulation No. 8, Part E).
- **2. Emission Factors -** All regulated emissions are below APEN reporting deminimis levels for these units.
- **3. Monitoring Plan -** The source shall comply with §63.764(e), §63.774(d) and Subpart A as indicated in Section II.4 of the Operating Permit.
- **4. Compliance Status -** A current APEN reporting criteria pollutants and HAPs is on file with the Division. This source is currently considered to be in compliance with all applicable requirements.

IV. Insignificant Activities:

Emissions from all insignificant activities shall be tracked on a yearly basis.

Two (2) dehydrator water tanks, 250 gallons each

Three (3) Diesel fuel tanks, 500, 100 and 1,000 gallons

Gasoline tank, 1,000 gallons

ISO 150, 210 bbl

SAE 40 lube oil, 210 bbl

1540 engine oil, 1,000 gallons

One (1) used lubricating oil tank, 210 barrels above ground

One (1) used lubricating oil tank, 750 gallons below ground

Two (2) used oil tanks above ground, 500 bbl each

Two (2) reboilers for dehydration units

V. Alternate Operating Scenarios:

The source requested the flexibility of the temporary engine replacement AOS.

VI. Permit Shield

The provisions of 40 CFR Part 63, Subpart HHH, § 63.1270 through § 63.1289 (the MACT standard for natural gas transmission and storage facilities) do not apply to this facility because the facility is not a natural gas transmission and storage facility within the meaning of Subpart HHH.

The standards of Section 40 CFR Part 63 § 63.764 (c) (the MACT standard for oil an natural gas production facilities) does not apply to this facility because the actual annual average flow of gas to the glycol dehydrator unit is less than 85 thousand standard cubic meters per day and the actual average emissions of benzene from the glycol dehydration unit process vents to the atmosphere are less than 0.90 megagrams per year. This permit shield is contingent upon the owner or operator maintaining the records specified by 40 CFR Part 63 §§ 63.772 (b)(1) and (b)(2).

The Acid Rain provisions of Title IV of the Clean Air Act, 42 USC §§ 7651-7651(o), including its implementing regulations, 40 CFR Parts 72-78, and Colorado Regulation 18 (implementing federal Acid Rain Program), do not apply to this facility because the facility does not generate electricity for sale.

The Accidental Release Prevention Program of the Clean Air Act, 42 USC § 7412(r), including its implementing regulations, 40 CFR 68, do not apply to this facility because the facility does not store more than a threshold quantity of a regulated substance in a process.

VII. Short Term Limits

As noted at the start of this review document, new procedures resulted in the removal of short term emission and production/throughput limits from Construction Permits. The short term limits replaced in the permits are summarized in the following table.

Construction Permit	Emission Point	NOx, lb/month	VOC lb/month	CO lb/month	Fuel Consumption, scf/month
95LA219	Caterpillar G3306NA Generator IC Engine, 142 HP SN 7Y2044	316.94	33.36	16.68	833,333
95LA220	Caterpillar G3306NA Generator IC Engine, 142 HP SN 7Y2983	316.94	33.36	16.68	833,333
96LA721-2	Caterpillar G3612SITA Compressor IC Engine, 2961 HP SN 1YG00100	4,333.4	3,333.4	11,833.4	17.1667 million
97LA524	Caterpillar G3612SITA Compressor IC Engine, 2961 HP SN 1YG00109	4,333.4	3,333.4	11,833.4	17.1667 million

11

Burro Canyon Compressor Station Technical Review Continued

Construction Permit	Emission Point	NOx, lb/month	VOC lb/month	CO lb/month	Fuel Consumption, scf/month
98LA0566	Caterpillar G3612SITA Compressor IC Engine, 2961 HP SN 1YG00123	4,333.4	3,333.4	11,833.4	
98LA0567	Caterpillar G3612SITA Compressor IC Engine, 2961 HP SN 1YG00137	4,333.4	3,333.4	2,333.4	17.2 million
98LA0568	Caterpillar G3612SITA Compressor IC Engine, 2961 HP SN (future)	4,333.4	3,333.4	2,333.4	17.2 million
98LA0569	Caterpillar G3612SITA Compressor IC Engine, 2961 HP SN (future)	4,333.4	3,333.4	2,333.4	17.2 million
98LA0570	Caterpillar G3612SITA Compressor IC Engine, 2961 HP SN (future)	4,333.4	3,333.4	2,333.4	17.2 million
98LA0571	Caterpillar G3612SITA Compressor IC Engine, 2961 HP SN (future)	4,333.4	3,333.4	2,333.4	17.2 million